Home Fire Sprinkler
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ARE FIRE SPRINKLERS GREEN?

Home Fire Sprinkler Coalition (HFSC) and Commercial Property Insurer FM Global Form Partnership to Study the Environmental Effects of Home Fires

FRANKFORT, IL (8/31/09)—The nonprofit Home Fire Sprinkler Coalition (HFSC) is partnering with FM Global, one of the world's largest commercial property insurers, on an unprecedented research project to identify, analyze and evaluate the environmental impact caused by home fires—a topic of increasing international importance.

In October 2009, FM Global will conduct full-scale fire tests to compare the environmental impact of sprinklered and non-sprinklered home fires. The tests will be conducted at FM Global's 1,600 acre, $125-million Research Campus in West Glocester, Rhode Island, USA.

"The Board of HFSC is pleased to partner with FM Global on this project," says Gary Keith, HFSC chair. "Sprinklers are proven to save lives and protect property. We know sprinklers also provide environmental benefits—benefits we will only be able to prove through scientific study."

When sprinklers activate, they control the heat, flames and smoke of a home fire, effectively mitigating the products of combustion. "The expectation is that a reduction in combustion also results in lessened pollution," Keith adds. "It's time to formally determine those qualities as well as the potential for reduced water-related impact. There's never been a better time to do a study like this because interest is at an all time high."

The results of the research will establish:

- The types, quantity and duration of air and water pollutants released from a home fire as well as the water usage from fire sprinklers and firefighters' hoses.
- The environmental impact resulting from burning household furnishings and finish materials as well as disposing the fire-damaged contents of a home.
- The carbon footprint associated with rebuilding a burnt home.

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HFSC/FM Environmental study

Add One

Following completion of the research, FM Global will publish a report documenting the test results and findings. HFSC and FM Global will make the report available to the public at no cost, in early 2010.

"Understanding the environmental benefits of fire protection in our homes provides a common basis to improve sustainable residential and commercial development," says Dr. Louis Gritzo, vice president and manager of research at FM Global. "This joint project is a natural tie-in to recently released technical research by FM Global showing ways businesses can be more environmentally sustainable by reducing their vulnerabilities to fire and natural disaster risks."

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About Home Fire Sprinkler Coalition (HFSC):

The nonprofit Home Fire Sprinkler Coalition (HFSC) (www.homefiresprinkler.org) is a national, 501(c)(3) charitable organization focused solely on educational outreach. It is the leading resource for independent, noncommercial information about residential fire sprinklers.

About FM Global:

Established nearly 175 years ago, FM Global (www.fmglobal.com) is a US$4.6 billion company that ranks 766 among FORTUNE magazine's largest companies in America. It has been named "Best Property Insurer in the World" by *Euromoney* magazine and "Best Global Property Insurer" by *Global Finance* magazine. Clients work with FM Global to develop robust property insurance and engineering solutions to protect their business operations from fire, natural disasters and other types of property risk. The company is rated A+ (Superior) by A.M. Best and AA (Very Strong) by Fitch Ratings.

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As Green as it Gets

Firefighters are truly heroes in the fight to go green

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By now, you have probably heard the newly popular term the "Carbon Footprint." It is the new key phrase and coined by environmentally conscious individuals who feel globally responsible. I believe that this new wave of enlightenment and environmental awareness is not just a fad, but will be here for a long, long time.

Just a decade ago, the global warming concerns and the major environmental issues have not been part of the American mainstream and were considered rather radical and left of the center, promoted mainly by the Sierra Club, Green Peace activists, and "tree huggers." I still remember, during the 1992 Presidential election, then-President George H. Bush, ridiculing the Democrat's vice presidential nominee, then-Senator Al Gore's environmentalist stances, by calling him the "Ozone Man."

But, we have come a long way since then. And despite the resentments of those who believe that these environmental issues are merely politically motivated ploys and discredit the validity of all the international scientific studies that point to the human factor as a major contributor to the global warming; along with the rest of the civilized world, Americans are gradually recognizing the importance of this issue, and accept their responsibility to be part of the solution rather than the problem.

Before going too far into the article though, just in case you didn't clearly know what the term "Carbon Footprint" means, let me explain it briefly. It simply means the sum of all emissions of Carbon Dioxide (CO2) which were induced by human activity within a given time frame (usually a year).

That being said then, as a fire service member, I can see that rather than the fire engine red, our color could just as easily be green! After all, what we do in our line of work is to put out the fires that spew out tremendous amounts of CO2 into the atmosphere, right? Then my friends, by the virtue of putting out these fires, we are as green as it gets!

Astute environmentalists are aware that wildland fires destroy millions of acres every year. They clearly recognize that these fires not only inject millions of tons of CO2 into the atmosphere, but also destroy the trees and vegetation that are

the natural filtration mechanism, that act in a sense like the Earth's lungs, and absorb the CO2 and then in return inject Oxygen back into the atmosphere.

To get a better feel for the magnitude of the wildland fires, take a look at the most recent statistics on the United States Fire Administration (USFA) website that shows that, in 2006, there were 96,385 wildland fires that destroyed 9,873,745 acres.

Unequivocally, fire service's mission in extinguishing fires, has direct impacts on both sides of the environmental equation. But what is not recognized neither by the environmentalists, nor by most in the fire service, is the fact that the structural fires have a significant "Carbon Footprint" too.

Once again, by suppressing the fires in the early stages, we not only reduce the atmospheric pollution by the products of combustion; but also considering that wood construction is dominant in America, by reducing the magnitude of the wasted lumber and property loss, in a sense we preserve the forests too, don't we? Let's put it this way, the less lumber burned down, the less trees get cut down.

There are many more structure fires than wildland fires. The National Fire Protection Association's (NFPA) most recent statistic shows that fire service responded to 530,500 structural fires in 2007. It is only logical to believe that decreasing the number of these more than half a million annual structural fires, as well as reducing the progression of fire by early suppression and extinguishment, would directly reduce the magnitude of the CO2 that gets spewed into the atmosphere year after year.

Something else worth remembering is the fact that because of all the petroleum-based products in the manufactured goods, furniture, carpeting etc., structure fires also spew tons of cyanide gases and other hazardous materials into the atmosphere. By the way, remember to add to that all the wasted water and the hazardous runoffs into the ground and streams, and the fact that all the lumbers burned down translate to more clear-cuts, and all the burned materials and junks would be dumped into our landfills, and then you can see the big picture.

Seriously, it would be an eye-opener if we could add up all the CO2 and other products of combustion gases, for all these structure fires that we have in our country every single year. Maybe then we can see that the fire-related pollutions spewed into the atmosphere year after year, is the "Big Foot" when talking about the "Carbon Footprints."

So do the environmentalists truly know our contributions to addressing the environmental global warming concerns? If not, let them know that not only we save lives, we protect the environment too. And also let them know that an unfortunate byproduct of these tough economic conditions that have resulted in many fire station closures, layoffs, and brown outs, etc., is our delayed response time to the fires, which translates to bigger fires thus bigger "Carbon Footprint."

It is worth recalling that well over two centuries ago, Benjamin Franklin, America's first fire chief said that "an ounce of prevention is worth a pound of cure." Taking his advice to heart, I would say that preventing fires in the first place would be the best strategy in decreasing the magnitude of the "Carbon Footprint" and the adverse environmental impacts of fires, won't you say? Or logically, at the very worst case scenario, we should focus on reducing our response times in suppressing the fires, so that the release of the hazardous products of combustion into the atmosphere is minimized. After all, besides saving the lives of the occupants and possibly the responding firefighters that would also be the truly "green" thing to do, right?

The little flame on a match can easily be extinguished with a little bit of spit applied by the thumb and the index finger; or it could simply be blown off with a little puff. But then, fires grow exponentially with time. And given adequate time, air, and fuel load, the same little flame can rapidly progress and could easily spread beyond the means of simple control. In suppressing fires, our fight is actually against time. The more time allowed for the fire to progress, the bigger the fire, the bigger the human and economic losses, the bigger the discharged pollutions, and the more difficult to extinguish it.

Take a look at the "Time versus Products of Combustion" illustration posted on the United States Fire Administration (USFA) website. And you can clearly see that the increase in time directly correlates to the magnitude of fire that as a result could significantly reduce the possibility of survival for the occupants and increase the hazards facing our firefighters. This USFA's illustration underlines the impact of response time, and also the importance of fire sprinklers in early suppression of fires.

Does our public clearly understand the fast pace of fire progression and the extreme dangers associated with it? Does our public recognize that despite our firefighters' best efforts to respond to the fires as fast as they humanly can, and even with all their heroic efforts to save lives and property, the exponential growth of fire results in significant reduction on the probability of survival for the occupants, and sharp increase to the property loss? Does our public realize that even a few minutes after the fire, the probability of structural failures and as a result firefighters' death or injuries increase significantly, considering that most buildings are lightweight construction? Is our public aware that the feasible fire sprinkler technology that can extinguish fires at the initial stages of development have been around for many decades?

Unfortunately, the answer is no; not really. Public education was one of the top priorities outlined in the historic 1947 President Truman's Conference on Fire Prevention, and also in the well-known 1973 American Burning Report. And yet, after all these years, we in the fire service have not truly educated our public the way we must.

Thus the public that we are sworn to protect, our customers if you may, our true masters who foot the bill for our services; do not really know what we do for

them, the challenges that we face, and what we need to be able to better protect them.

I believe that educating the public is even more important now, especially during these tough economic times that we are currently experiencing. The more value we bring to the table, the better rate of return we deliver on the taxpayers' investment, the stronger our foundation and the more support we will receive from our public.

We need to educate our public about life safety and fire protection. And the better job we do in that, the more demand it would create. Look at it this way. At this day and age, can you imagine anyone at all going to a car dealership and wanting to buy a car without the seatbelts, or the airbags? Would you even consider buying one, if it was legal and offered at the dealership? Would you risk your family's safety for a few hundred dollars less? Thanks to the traffic safety education efforts of many decades, we the public, have all learned that seatbelts and airbags save lives.

Yes, there was an initial resistance and lack of acceptance at first. And just as the "helmet law" people believed that such requirements would be an infringement on their freedom. Certainly, the force of the law was the impetus for change at first, and pushed the public toward acceptance of these lifesaving technologies. But now, being educated about the hazards and concerned for their own safety, public demands the seatbelts and the airbags.

Rather similarly, although the current high price of fuel had a direct impact, yet the public's awareness about the global environment concerns has created a demand that is the real impetus of change in the automobile industry's shift toward the development of alternative fuel vehicles. I can imagine that a few decades from now, societal acceptance of gas driven engines would probably be as low as our acceptance of cars without seatbelts or airbags.

Supply and demand is the name of the game in the industry. The public must have the demand, and the market force would bring industry's compliance. And I believe that education plays the key role in establishing that demand.

I believe that we need to do the very same thing with the fire sprinklers. We must educate the public, so that they demand it in all their homes, and not accept anything less for the safety of their families. Just as they would not buy any car without the seatbelts or the airbags.

Right now, the general public doesn't really recognize the true value of the fire sprinkler technology in protecting their lives and properties. And it is up to us in the fire service to educate them and create that demand.

We must educate them from any/all perspectives, showing them that fire sprinklers save their lives, reduce their property loss and the economic impacts on their communities; and yes indeed, by putting out the fires in the earliest

stages of development, fire sprinklers significantly reduce the magnitude of the pollutants released into the atmosphere. Let them realize that not only fire sprinklers save the lives of the occupants and possibly the responding firefighters; they are also as green as it gets, and reduce the "Carbon Footprint."

But, here is my challenge and the reason for writing this particular article. Lack of proof and absence of scientific data to prove to the environmentalist, that the fire sprinkler systems' early operation and extinguishment of fires is much better for the environment and reduce the "Carbon Footprint."

Even though it is quite logical and is as clear as the day to me, without scientific proof and data, it is not possible to include the life saving fire sprinkler technology into the body of the new "Sustainable," "LEED Design," and the "Green Building" codes that are under development.

I believe that conducting burn tests and performing scientific studies would definitely assist us in accumulating the necessary data to convince the code developers to include the fire service concerns into the body of their new codes. Conducting this study must be one of our highest priority researches in the very near future.

In my articles, I have always focused extensively on the importance of educating the public and the elected officials about the true magnitude of the total cost of fire in our country. I have stressed the fact that by being proactive and focusing on fire prevention, and by promoting installation of the readily available fire protection technologies such as the fire sprinkler systems, not only we can reduce the fire fatalities, but we can also decrease the adverse economic impacts of fires. There are many NFPA and USFA studies and reports available for proof. But when it comes to proving that by putting out fires at the earliest stages of the inception, fire sprinklers reduce the "Carbon Footprint" I am not on solid grounds anymore.

Yes, we can clearly see from miles away, the plume of smoke rising from a house fire, and we know that it is spews out a heck of a lot of more CO2 into the atmosphere than the exhaust from our vehicles. But what is the magnitude? A simple "heck of a lot," is not the answer and is not going to do it my friends.

At this day and age that you can search on the internet and find many sites with "Carbon Footprint Calculators" that can calculate your detailed individual contributions into the global environmental crisis and show you where you can make a reduction and reduce your "Carbon Footprint," isn't it a petty that we in the fire service don't have exact scientific measures to prove our case?

That being said, I believe that results from a series of tests conducted in the burn labs of the National Institute of Standards and Technology (NIST) could provide the detailed measurements of the products of combustion released and the pollutants emitted to the atmosphere during the structural fires. Similarly NIST could also conduct a series of identical burn tests for the structures protected by

the fire sprinkler systems. Undoubtedly, the results would prove that by extinguishing the fires at the earliest stages of progression, fire sprinkler systems have a significant positive impact on reducing the pollutants discharged.

These types of scientific studies, conducted by a highly reputable federal government agency such as NIST, are very important and quite essential for the success of the fire service's efforts in addressing the fire problem in our country.

Why is it important? Because, they will provide tangible and quantifiable results that help underline the importance of the readily available and feasible fire sprinkler system technology, in providing a higher quality of fire and life safety for the public and protecting our communities.

Logic dictates that having substantial proof and scientific data, the environmentalist who support legislative efforts for the various environmental issues, such as the smaller more efficient cars with better gas millage, or the new hybrid cars, would certainly recognize the adverse impact and the significant "Carbon Footprint" of the fires, and be supportive of our efforts in addressing the fire problem in our country. I believe that they could be good allies of the fire service.

Remind the environmentalist that fire sprinklers are as green as it gets, and that they should put all their support behind this technology. Let the elected officials know that by reducing the property fire loss, fire sprinklers save them green, cash that is. With all that said, although I am all for green, deep down in my heart, I am still fire engine red; because to me, the most important fact about the fire sprinklers, is that they save the lives of the public and our firefighters.

- Time for Change: What is a carbon footprint?
- "USFA Fire Statistics: Total Wildland Fires and Acres
- Time vs. Products of Combustion (PDF)
- Carbon Footprint Calculator

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